
**IX. Epistola Domini Antonij van Leeuwenhoek,
R. S. S. de Osculis, sive Spiraculis Foliorum
Buxi, item de lanugine Malorum Persicorum
& Cydoniorum.**

Delphis, 15. Januarij 1721.

NUPER Cogitationem meam converti ad Frondes Arborum nostratium, tacitusque meditabar num & illæ forsitan Osculis sint instructæ ; cum igitur in Area mea duas haberem Arbusculas, sive Plantas illius Buxi, quæ Vulgo *Palma Ceres* appellatur, folium ex iis unum decerpsti, & in partes divulsum ope Microscopij contemplatus sum. Tum vero partes illas, per quas Transpiratio vel Exhalatio sit, clarissime visu distinxi. Adhæc complures percepi exiguissimos Hiatus, qui lucem transmittebant : Quos tamen commodius majorique numero percepisti, cum partes prædicti folij aliquanto essent sicciores.

Cum præterea supra porticum Domus meæ, quæ Porticus plum bocontecta est, alia staret Arbuscula Buxi ; quædam illius Foliola, partim adhuc virentia, partim exsiccata, mihi adferenda curavi, ut illorum Texturam, quantum possibile esset, investigarem : Quod eo Successu feci ; ut istiusmodi Oscula, sive Spiracula, in foliis istis clarius Visu percepim, quam in ullis unquam Fructibus ante percepisse. Ut autem Multitudinem Osculorum, quæ in tali Foliolo percepisti, velut Oculis expositam haberem ; Folium Buxicum Lineali imposui cupero, quod

quod in varias partes distinctum erat: Comperique Longitudinem Folij parem esse octonis partibus Pollicis, in decem partes distributi; Folij vero Latitudinem cum medietate pollici, sive quinque decimis partibus exæquari.

Jam vero ponamus tali Foliolo Figuram esse Ovalam; adhæc Latitudinem ejus atque Longitudinem conjungamus: Tum exsurget numerus 13, cuius dimidium sit $6\frac{1}{2}$. Dein ponamus idem Foliolum, post illam Latitudinis atque Longitudinis conjunctionem, instar Circuli esse rotundum; illiusque Diametrum $6\frac{1}{2}$ decimis Pollicis partibus ex æquo respondere.

Exinde juxta Foliolum ante dictum, locavi Pilum Porcinum; quem adhibito Microscopio contemplatus, judicavi duodecim Buxi Oscula, si sibi contigua jacarent, cum Diametro Pilii Porcini Longitudine exæquari; Sexaginta vero Pilos Porcinos judicabam Magnitudinis esse pollicaris. Sequitur decimam quamque Pollicis partem sex Diametris Pilorum Porcinorum Longitudine parem esse; dimidiatam vero Diametron Folioli Buxei cum $19\frac{1}{2}$ Diametris Pilorum Porcinorum exæquari. Quæ $19\frac{1}{2}$ Diametri, si duodecies, id est juxta numerum Osculorum, multiplicentur; efficitur numerus 234, quam Longitudinem dimidiatus Folioli Buxei circulus ex antedictis habet.

Ut autem quid tali Circulo contineatur suppitemus, primo cum Geometris statuendum est; quæ proportio est numeri 14 ad numerum 11, eandem Proportionem esse inter numerum quadratum Diametri cujusvis Circuli, & ea quæ Circulo ipso continentur. Sequitur unam Folij Buxei Superficiem Osculis 172090 præditam esse. Cum autem altera Superficies haud paucioribus instructa sit; tandem exsurget numerus

Osculorum 34180, quorum Ope Perspiratio & Exhalatio fiat.

Cum Lanuginem illam, quæ Mala Persica, vulgo Montana convestit, nupera Æstate sine Microscopio considerarem; Frustula quædam Mali Persici, ex cortice excisa, ante Microscopium collocavi. Tum vero iudicabam Floccos illos Laneos Multitudine pares esse Osculis per cutem Mali Persici diffusis. Et quemadmodum Oscula Fructuum velut inter duo labiola patescere, nec plane rotunda sed aliquantulum oblonga esse, jam ante monui; sic Flocci Lanei, ex Osculis dictis efflorescentes, non omnino rotundi sunt, sed nonnihil plani. Sed & complures in medio Ruga quadam notatos esse videbam.

Ut autem Multitudinem Osculorum halitus exspirantium palam proponam; unâque ingentem numerum exhalantium humorum, qui Aerem ingressi in particulas oblongas, sed alias aliis longiores spissescunt, Oculis subjiciam; exiguum Mali Persici portionem delineari & in Icone 3 per A B C D E F G indicari curavi. Ubi quidem A B F G perpusillum est Frustum Mali et Corticis Persici, per B C D E F lanugo Malo adhærescens designatur.

Magnitudinem dicti Frustuli, per Iconem designati, sic æstimare poteris: Tres Vultus mei Pilos Microscopio applicatos habebam, quos Piëtori post Iconis modo dictæ Delineationem intuendos exhibui. Cum deinde ejusdem Iconis Longitudinem, a G ad A in 16 Partes distribuisse; rogavi quot latorum pilorum Diametros in illa Iconis Longitudine contineri judicaret; qui, *ne oculo quidem* respondit. Quod si verum esse statuamus, quam incredibili Floccorum Laneorum Multitudine necesse est Malum Persicum circumvestiri!

Cum postea Mala sive Pyra Cydonia permaturuissent, quasdam etiam Mali Cydonij particulas ad Microscopium applicavi ; & Lanuginem, quæ ex Malo Cydonio exhalatur, neque Lanugini Mali Persici Copiâ cedit, delineandam curavi ; quæ omnia in Icone 4 designata vides per H I K L M N O. Ubi H I N O perparva est portio Mali Corticisque Cydonij, per I K L M N Lanugo ex Malis Cydoniis exsudans indicatur. Quæ Lanugo, licet in Cydoniis longior quam in Persicis, non tamen in illis erigitur, sicut in istis ; sed crispando sibi invicem impletitur.

X. *Remarks on some Attempts made towards a perpetual Motion, by the Reverend Dr. Desaguliers. F. R. S.*

THE Wheel at *Hesse-Cassel*, made by Monsieur *Orffyreus* and by him called a perpetual Motion, has of late been so much talk'd of, on Account of its wonderful *Phænomena*, that a great many People have believed it to be actually a self-moving Engine ; and accordingly have attempted to imitate it as such. Now as a great deal of Time and Money is spent in those Endeavours, I was willing (for the Sake of those that try Experiments with that View) to shew that the Principle, which most of them go upon is false, and can by no Means produce a perpetual Motion.

They take it for granted, that if a Weight descending in a Wheel, at a determinate Distance from the Centre, does in its Ascent approach nearer to it ; such a Weight

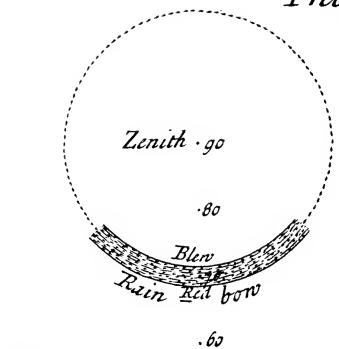


Fig. 1.

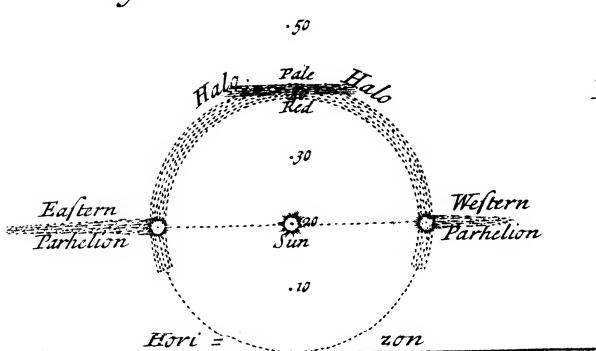
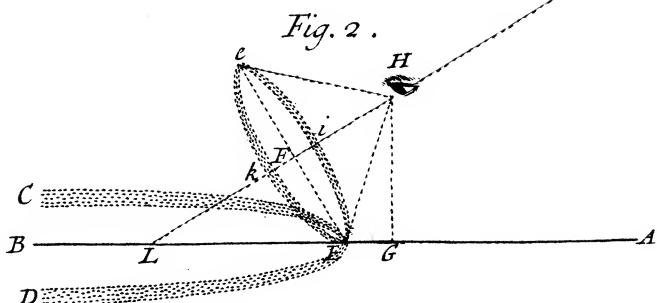


Fig. 5.

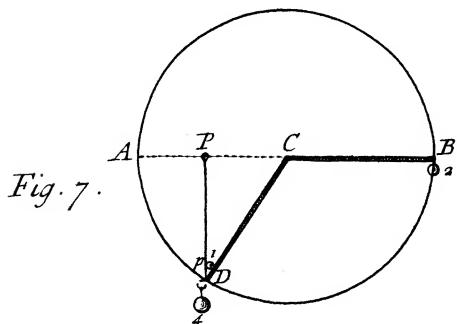
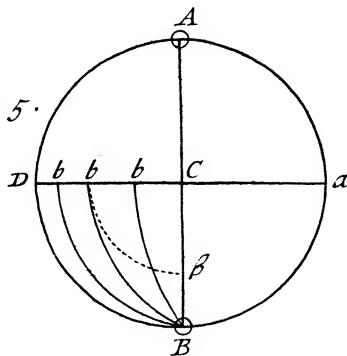


Fig. 7.

Fig. 6.

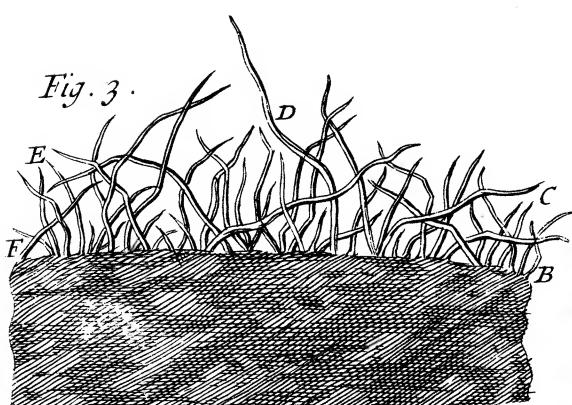
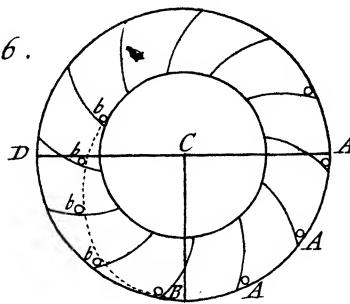


Fig. 3.

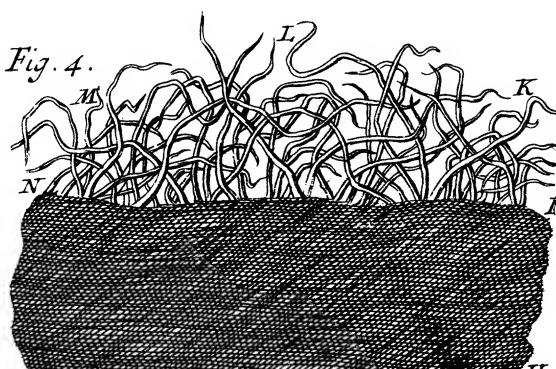


Fig. 4.